

CASE STUDY REPORT #28  
LOON LAKE DAM AND GERLE CREEK

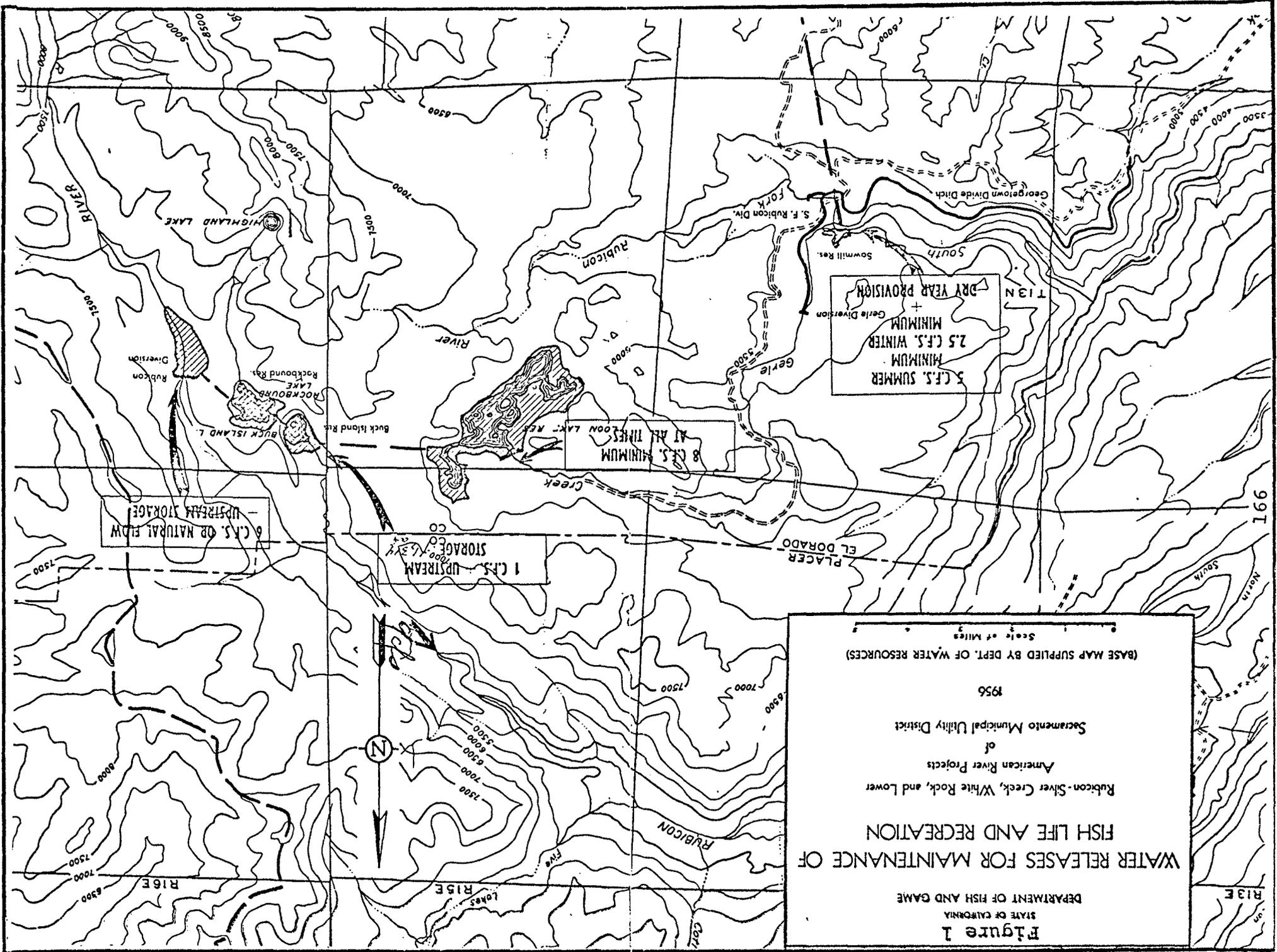
I. Project Description

The dam forming the present Loon Lake was constructed on Gerle Creek in 1963 by the Sacramento Municipal Utility District (SMUD). Feasibility planning for this project was started before 1956, and it was licensed by the Federal Power Commission as a hydroelectric power project for a 50-year term in 1957. The State Water Rights application was filed in 1948. Water into the reservoir is regulated by upstream reservoirs and large amounts of water are diverted from the Rubicon River watershed into Loon Lake through the Meeks Bay tunnel. Statistics concerning the project are contained in the attached inventory form. The general location of Loon Lake and its associated reservoirs is shown in Figure 1.

II. Pre-Project Conditions

Loon Lake existed before the present project and was owned and operated by the Georgetown Divide Public Utility District. A 33-foot high dam flooded three small natural lakes to form a 622-acre impoundment storing 8,000 acre-feet. Water was released into Gerle Creek and diverted from the creek about 8 miles downstream into Georgetown Divide Ditch from which water was withdrawn for domestic and irrigation purposes.

C-064150



**Figure 1**  
 STATE OF CALIFORNIA  
 DEPARTMENT OF FISH AND GAME

**WATER RELEASES FOR MAINTENANCE OF  
 FISH LIFE AND RECREATION**  
 Rubicon-Silver Creek, White Rock, and Lower  
 American River Projects  
 of  
 Sacramento Municipal Utility District  
 1956

(BASE MAP SUPPLIED BY DEPT. OF WATER RESOURCES)  
 Scale of Miles

R13E

T13N

99T

The original Loon Lake was heavily used for recreation and contained rainbow and brook trout among several non-game species. The lake was regularly stocked by the Department of Fish and Game (DFG) receiving over 300,000 planted trout from 1950 to 1956. Gerle Creek, the outlet from Loon Lake, is a major tributary of the Rubicon River. Although the drop is 1,320 feet over its 10-mile length, much of this drop is in the form of cascades and consequently other reaches are of moderate slope flowing through meadows and coniferous forests. The channel is trough-shaped and without steep canyons. The creek is easily accessible by foot and vehicle.

The flow in Gerle Creek was regulated by the Georgetown Divide Public Utility District dam forming Loon Lake and high flows were the exception (see Figure 2). According to DFG, the regulated summer flow was about 25 cfs above the diversion ditch where most of the water was diverted. When the dam was closed, leakage and channel accretions maintained a small flow in the channel.

Rainbow, brown and brook trout provided fishing in the stream. DFG estimated that 3,600 angler days were spent in July and August 1956 and these anglers caught 3,000 rainbow trout and 900 brown trout. The creek is heavily used for fishing and other recreation.

SOURCE: USGS WATER SUPPLY RECORDS 1315-A  
GAUGE STATION NO. 429  
GERLE CREEK BELOW LOON LAKE  
AUGUST 1910 — SEPTEMBER 1912

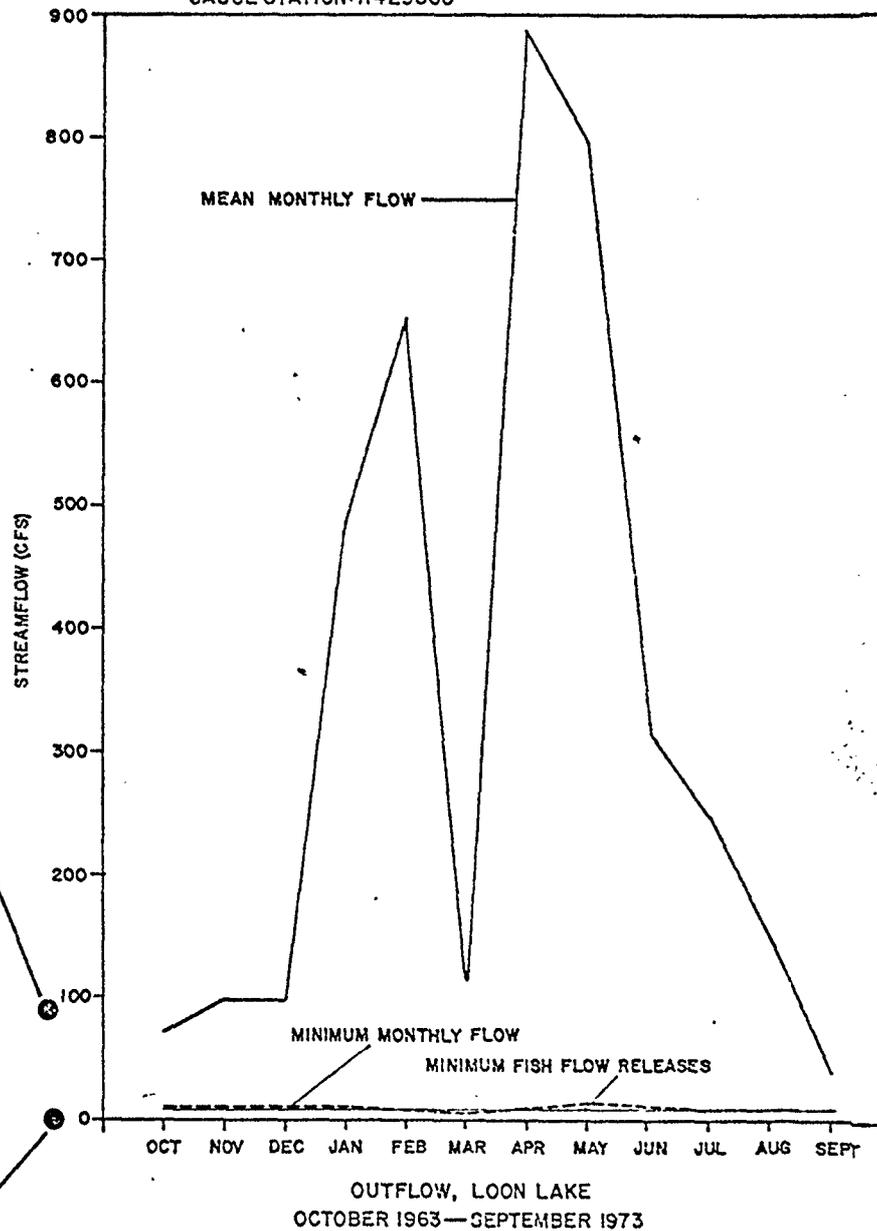
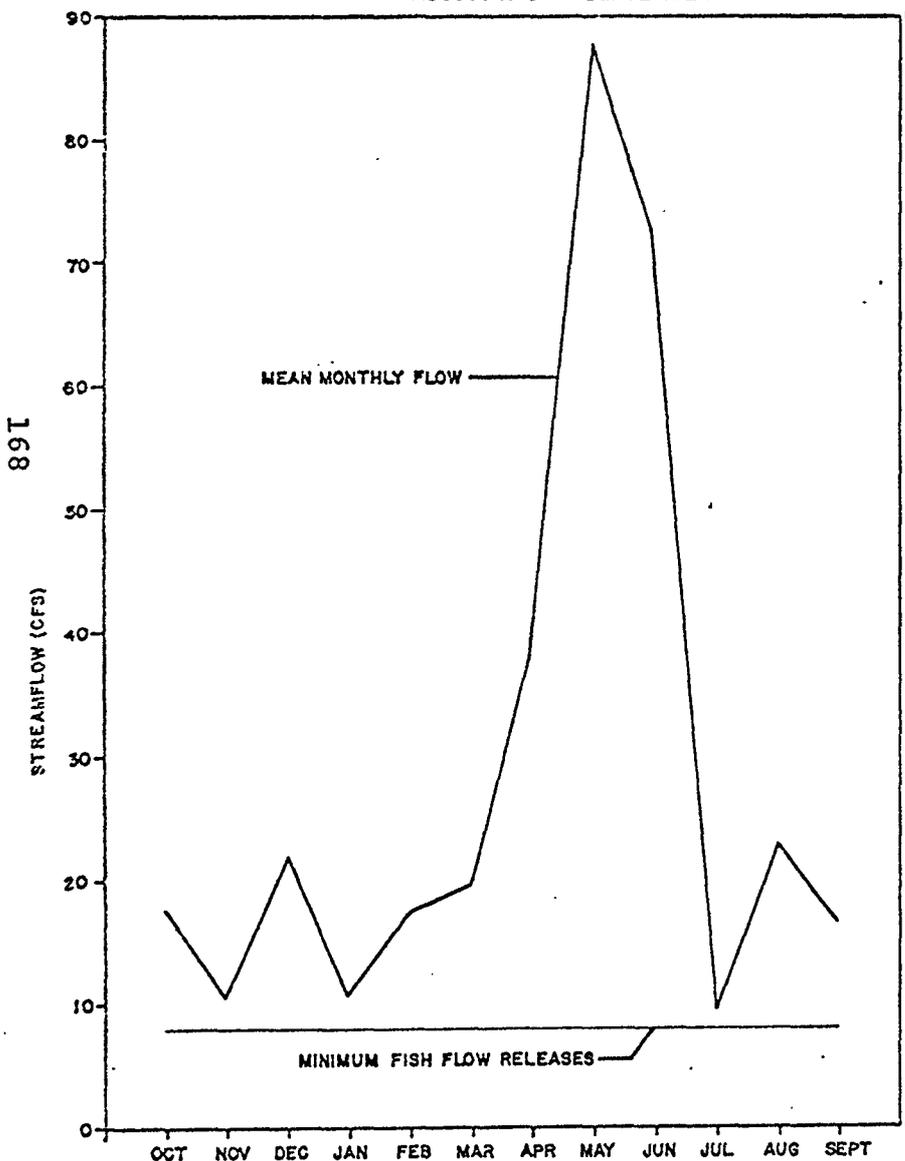


FIGURE 2  
STREAMFLOW CONDITIONS, GERLE CREEK  
BELOW LOON LAKE

During their 1956 assessment of the project, DFG concluded that the stream habitat was good and that summer flows of about 25 cfs were providing good fishing. Stream flow during some winters was very low and probably resulted in winter fish kills.

Stream flows in Gerle Creek, after it was impounded by the Georgetown Divide Public Utility District in 1894, are shown in Figure 2. Snowmelt during spring provided the peak discharge with relatively constant flows of 20-30 cfs at other times. After impoundment, winter and peak spring flows were probably greatly decreased by storage.

### III. Project Development

Apparently an in-stream flow agreement between DFG and SMUD was achieved through a series of negotiations. Records indicate that DFG assessed Gerle Creek in response to SMUD's proposed construction of a larger Loon Lake Dam. This survey was generally subjective and insofar as can be determined, there was no investigation to quantify stream flow requirements.

In 1956 the project was described to DFG as one where about 150 cfs would initially be released during the summer months with no release during the winter months. In comparison to previous conditions, the summer flow would increase by a factor of 5 or more and winter flow conditions would be nearly the same as before. DFG concluded that the new fishery would be unpredictable at this time because the two situations were not

comparable, i.e., 25 cfs vs. 150 cfs. They also concluded that "the channel would probably adapt itself to this new flow regime, but rapid changes in the flow would cause scouring of the stream bed which would be detrimental to fish and fish food organisms". However, these larger releases would pass water beyond the Georgetown Divide Ditch into the lower part of Gerle Creek where water was not at times a limiting factor to fish. Based on previous fishing experience, the proposed flow would be detrimental to fishing.

DFG recommended that SMUD maintain a minimum flow of 8 cfs in Gerle Creek at all times at a point 1/4 mile below the dam. SMUD agreed to the 8 cfs minimum flow at all times with the stipulation that another flow release could be negotiated if and when a foreseen power development below Loon Lake becomes a reality. These conditions were agreed to by both parties and subsequently the water releases for fish were made a part of the Federal Power Commission Permit (#2101) and the State Water Rights Permit. Insofar as known, there have been no changes to this agreement.

#### IV. Post-Project

Water releases down Gerle Creek between 1963 and 1973 are shown in Figure 2. There is no record of any past project fisheries investigation. The great change in flow, over a magnitude, results principally from the transfer of Rubicon

River watershed into Loon Lake from which it flows down Gerle Creek; mean flows during the fishing season have generally ranged from 100 to 200 cfs. Peak winter and spring flows of over 600 to 800 cfs are assumed to be the dominant controlling factor for fish habitat. These flows are more than 10 times those original streamflows that established the modern stream habitat.

California Department of Fish and Game assessed the fishery population in the Wentworth Springs area in the summer of 1968 and again in 1973. The 1968 survey found 10 pounds per acre of rainbow and brown trout. The same results were recorded in the 1973 survey. The population trends have not improved even though the flows have been altered to provide additional water for fishery maintenance.

#### V. Conclusion

The enlargement of Loon Lake Reservoir and the development of the Rubicon River has greatly increased the mean monthly flows in Gerle Creek (Figure 2). Mean monthly flows in normal water years are in excess of the minimum instream flow reservation of 8 cfs.

In response to the proposed enlargement of Loon Lake, DFG surveyed Gerle Creek. There was no investigation to quantity streamflow needs or affects. The proposed increase in summer flows by a factor of 5 was examined and DFG concluded

that the new fishery would be unpredictable because the historic and proposed situations (25 cfs vs. 150 cfs) were not comparable.

In 1968 and again in 1973 DFG surveyed the fishery below Loon Lake and found the fishery had not changed, even though there was considerably more water in Gerle Creek. The trout population trends have neither improved nor declined.

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